

Abstract

The National Weather Service (NWS) uses computer models that simulate river flow, rainfall, and other factors to generate flood predictions. When necessary, warnings are issued to recipients, who represent many communities of interest, including emergency services, water management organizations, commercial broadcast agencies, and the general public. The overall utility of these warnings may be limited due to two key challenges: (1) information needs and knowledge levels vary greatly across audiences; and (2) the process of predicting hydrological phenomena is inherently filled with uncertainty, which can be difficult to communicate effectively. Our proposed solution to these challenges features three activities: (1) formulation of a theory of uncertainty as it pertains to the impact of flood events on the concerns of different types of audiences; (2) design of visualization techniques to maximize the comprehension and utility of flood information to a broad range of users; and (3) design of a prototype system that can serve as an intermediary between NWS and end-user communities of interest. The envisioned system will monitor NWS flood prediction data and transform them into formats that are optimized for the knowledge level and information needs of each audience. The resulting visualizations will help people better understand current and possible future conditions, and help them weigh the risks and benefits of alternate courses of action. The project deliverables will be a mid-term progress report, and a final report with the results of activities (1) through (3).